HHS Public Access

Author manuscript

J Occup Environ Med. Author manuscript; available in PMC 2017 June 01.

Published in final edited form as:

J Occup Environ Med. 2016 June ; 58(6): 588–593. doi:10.1097/JOM.0000000000000701.

Psychosocial Factors Related to Lateral and Medial Epicondylitis: Results from Pooled Study Analyses

Matthew S. Thiese, PhD, MSPH[*,a], **Kurt T. Hegmann, MD, MPH**[a], **Jay Kapellusch, PhD**[b], **Andrew Merryweather, PhD**[c], **Stephen Bao, PhD**[d], **Barbara Silverstein, PhD**[d], **Ruoliang Tang, PhD**[b], and **Arun Garg, PhD**[b]

[a] Rocky Mountain Center for Occupational and Environmental Health (RMCOEH), University of Utah, Salt Lake City, UT, USA

[b] Center for Ergonomics, University of Wisconsin-Milwaukee, Milwaukee, WI, USA

[c] Department of Mechanical Engineering, University of Utah, Salt Lake City, UT, USA

[d] Safety and Health Assessment and Research for Prevention (SHARP) Program, Washington State Department of Labor and Industries, Olympia, WA, USA

Abstract

Objective—The goal is to assess the relationships between psychosocial factors and both medial and lateral epicondylitis after adjustment for personal and job physical exposures.

Methods—1824 participants were included in pooled analyses. 10 psychosocial factors were assessed.

Results—121 (6.6%) and 34 (1.9%) participants have lateral and medial epicondylitis respectively. Nine psychosocial factors assessed had significant trends or associations with lateral epicondylitis, the largest of which was between physical exhaustion after work and lateral epicondylitis with and odds ratio of 7.04 (95% CI=2.02-24.51). Eight psychosocial factors had significant trends or relationships with medial epicondylitis, with the largest being between mental exhaustion after work with an odds ratio of 6.51 (95% CI=1.57-27.04).

Conclusion—The breadth and strength of these associations after adjustment for confounding factors demonstrate meaningful relationships that need to be further investigated in prospective analyses.

Introduction

Lateral and medial epicondylitis are two of the most common upper extremity diagnoses, after carpal tunnel syndrome. Prevalence of lateral epicondylitis range from 1.3% to 10.4%,

[*]Corresponding author, matt.thiese@hsc.utah.edu, Phone:801.581.4800, Fax:801.581.7224, Rocky Mountain Center for Occupational & Environment Health, Department of Family and Preventive Medicine, School of Medicine, University of Utah, 391 Chipeta Way, Suite C, Salt Lake City, UT 84108.

This research has been approved by the relevant Institutional Review Boards

No co-author reported a direct financial interest in the results of the research supporting this article. The authors declare that they have no conflict of interest.

with wide variation based on the population studied and the case definition use.(1) Medial epicondylitis has a much lower prevalence, ranging from 0.4% to 4.6%.(1) Individually, these two diagnoses account for a meaningful amount of lost time and workers compensation claims with some studies reporting as high as 5% of people with these diagnoses go on long term medical leave because of their elbow symptoms.(2, 3)

There have been many factors associated with both lateral and medial epicondylitis. These factors can generally be classified into personal or occupational. Personal factors associated with these two outcomes include obesity, smoking, age, gender, and to a lesser extent, diabetes mellitus and hand intensive hobbies. (1, 4-9) Occupational factors include repetitive movements, particularly bending and straightening of the elbow, forceful activities, manual work, and combinations of these exposures. (1, 10, 11)

There have been multiple studies reporting the relationships between psychosocial factors and other musculoskeletal disorders, particularly carpal tunnel syndrome, but there have been relatively few publications evaluating relationships between psychosocial factors and either LE or ME. An exhaustive literature search identified 14 articles evaluating occupational psychosocial factors or personal psychosocial factors related to either LE or ME or a combination of the two diagnoses. Many of these studies did not find statistically significant relationships between psychosocial measures and LE or ME. Possible reasons for this include both uncontrolled confounding and small sample size. Of the few studies that did identify a relationship, the relationships were relatively weak and inconsistent. A study by Descatha (2003) reported that there was a relationship between depression and LE with an odds ratio (OR) of 1.63 and 95% confidence interval (95% CI) of 1.08, 2.46.(6) This relationship was not seen with medial epicondylitis. There have also been reports of high social support and decision latitude being protective for lateral epicondylitis and musculoskeletal symptoms in the elbow (7, 11, 12). While many of these studies identified relationships between psychosocial factors and LE or ME, they did not adequately control for other factors.

The goal of this study is to quantify the relationship between independent outcomes of LE and ME psychosocial factors in both occupational and personal domains while controlling for occupational and personal factors that may confound this relationship.

Methods

This study was approved by the Institutional Review Boards of University of Wisconsin – Milwaukee (UWM), Washington State, and the University of Utah (UU). Data from the UWM and UU used identical methods as one cohort.(13) Data from Washington State's SHARP used comparable methods. Detailed descriptions of methods and data collection instruments used in this these individual studies have been previously published and thus abbreviated methods follow. (13-16)

Raw data from the WISTAH study conducted by UU and UWM in Wisconsin, Utah, and Illinois and Washington State's SHARP study were pooled and analyzed for this proposal. (13-16) Because raw data were used, we did not rely on prior analyses conducted by either study group. There were some differences between data collected between the groups, and

those differences are discussed in detail below. Overall methods for participant selection and data collection were very similar between the groups.

This study reports pooled raw data, cross-sectional baseline data analyses that includes employed participants recruited from 35 diverse facilities representing 25 industries located in Illinois, Utah, Washington, and Wisconsin. These participants worked in the manufacturing, food processing, healthcare, and office employment sectors. All participants provided written, informed consented prior to enrollment.

Psychosocial Factors and Demographic Data

Psychosocial factors and demographic data, including medical history, were collected using electronic questionnaires. Psychosocial data were collected as part of a baseline questionnaire, which also collected information regarding demographic data and past medical history. Body mass indices were calculated from measured heights and weights. All data were collected by trained research teams who were blinded to the psychosocial, job physical exposures, and health outcomes of the workers respectively.

Ten psychosocial measures were pooled between the three research sites (Table 1). Three questions (numbers 1, 2, and 10) were adapted from the NIOSH Generic Job Stress Questionnaire,(17) and three others (questions 6, 8, and 9) were adapted from the Job Content Questionnaire.(18) The remaining questions (questions 3, 4, 5, and 7) were developed by the research teams for these studies. The questions created for these studies have been used in other studies,(19-21) however they have not been validated. These psychosocial measures comprised: 1) general health compared to others, 2) depressive symptoms, 3) physical exhaustion after work, 4) mental exhaustion after work, 5) how well participants get along with coworkers, 6) job satisfaction, 7) how well participants get along with their closest or immediate supervisor, 8) degree to which participants would recommend their job to others, 9) if participants would take the job again, and 10) degree to which participants feel that their employer cares about their health and safety on the job. Responses to each measure were categorized into 3 or 4 levels depending on the number of potential responses.

Health Outcomes of Lateral and Medial Epicondylitis

The case definitions include a combination of epicondylar pain (i.e., lateral elbow or medial elbow pain) and at least one positive physical examination maneuver. Lateral epicondylitis and medial epicondylitis were assessed separately. This study's analyses are of health outcomes only in the right elbow because of higher prevalence in the right as compared to the left elbow, and capture of occupational physical exposure data. Participants were excluded if they reported symptoms that were a result of an acute injury.

Lateral epicondylitis (LE) symptoms for the WISTAH half of this study's pooled data was pain in the lateral elbow.(13) Symptoms for the SHARP data included pain, aching, stiffness, burning, numbness or tingling in the elbow or forearm for either 4 or more episodes in the past year, or an episode of at least 7 days duration in the past year, or an episode of at least 1 day duration in the past 7 days. A positive physical maneuver for both halves of this study's

datasets for lateral epicondylitis was either pain over the lateral epicondyle with resisted wrist extension or pain in the lateral epicondyle with resisted middle finger extension.

Medial epicondylitis (ME) symptoms were the same as for lateral epicondylitis, except involving the medial elbow. Both studies used the same positive physical maneuver for medial epicondylitis which was pain in the medial epicondyle with resisted wrist flexion.

Potential Confounders

For purposes of this study's analyses, potential confounders include age (in years), gender, body mass index, and job physical exposures of Threshold Limit Value for Hand Activity Level (TLV for HAL) (17, 18) and Strain Index (SI) (13, 22, 23) for the right hand. Participant-specific data used to calculate the TLV for HAL and SI were collected by trained ergonomics analysts who were blinded to both psychosocial and health data. Job physical data also include: a) video recording of each workers individual tasks b) specific task duration c) expert peak hand force rating, (24) and d) length of work shift.

Video recordings were evaluated to extract data of overall force ratings, exertion duration, posture and work speed for each task and where possible were also assessed directly from recorded video of multiple cycles of each participants' tasks. Standardized and trained expert ergonomists evaluated each video and quantified individual duration of exertions, repetition and overall force ratings for both hands of each worker for SI score calculations. The definition of a forceful exertion was those exertions rated 2 or greater on the Borg CR-10 scale.(24) Analysts were blinded to the psychosocial measures and health outcomes of the workers. TLV for HAL and SI were calculated for each individual task that a participant performed and followed prior published methods.(22) A meaningful fraction of participants (n=710, 38.7%) performed more than one task as part of their job. We defined "typical exposure" (i.e., exposure from the task the worker performed for the largest percentage of a work shift) as being representative of the worker's daily exposure. For comparative purposes we also explored the alternative techniques of "peak exposure" (i.e., exposure from the most stressful task performed), and time-weighted-average (TWA) exposure from all tasks performed during a work shift. Details of these job physical exposure summarization techniques are described elsewhere. (13, 23)

Statistical Analyses

Descriptive statistics and correlations between psychosocial factors were performed. Spearman correlation coefficients were calculated between each of the 10 psychosocial factors. Logistic regression was performed to individually assess the association between psychosocial factors and both lateral epicondylitis and medial epicondylitis. All analyses were performed using SAS 9.4 software (Cary, NC). Statistical significance was at $p<0.05$. Multivariate modeling includes adjustment for confounding factors of age, gender, body mass index, and job physical exposures.

Results

A majority of the study participants were women (59.65%) with a mean age of 41.12 years and average BMI of 28.65 kg/m^2 (Table 1). Those with either lateral or medial epicondylitis

were more likely to be older, female, have been diagnosed with diabetes mellitus and be a current smoker. There were meaningful differences in proportion of participants who reported negative psychosocial measures (e.g. often being mentally exhausted after work) among those with lateral or medial epicondylitis as compared to the total sample. Complete descriptive statistics for this population can be found in table 1.

Correlations between psychosocial factors can be found in table 2. Most of the correlation coefficients were low, with only three pairs having moderate correlations (r>0.5). The highest correlation was between “8. Recommending the job to others” and “9. Taking the job again” with a correlation coefficient of 0.603. “6. Job Satisfaction” was also moderately correlated with “8. Recommending the job to others” and “9. Taking the job again” with correlations of 0.554 and 0.594 respectively.

After adjustment of age, gender, BMI, and Strain Index, there were many significant relationships between psychosocial factors and both lateral and medial epicondylitis (Table 3). There was a significantly increased likelihood of participants having lateral epicondylitis if they had worse health compared to people their own age, depressive feelings, physical exhaustion after work, mental exhaustion after work, job satisfaction, not recommending their job to others, unlikely to take their job again, and not feeling that their employer cares about their health and safety on the job. Relationships with these factors and medial epicondylitis were similar in direction but less significant yet showing many similar trends. The only psychosocial factors where lateral and medial epicondylitis differed in their relationships were for getting along with coworkers. There was a significantly increased relationship (OR=3.19) of having medial epicondylitis for those who hardly ever/never get along with their coworkers, while there was not a relationship seen with lateral epicondylitis. There was no significant relationship between supervisor support and either lateral or medial epicondylitis. Additional adjustment for tobacco use, diabetes mellitus and thyroid disorder did not meaningfully change the relationships between psychosocial factors and lateral or medial epicondylitis (data not shown). Current tobacco use was significantly related to lateral epicondylitis (OR=1.96, 95% CI=1.25, 3.08) and medial epicondylitis (OR=2.70, 95% CI=1.15, 6.06) after adjustment for age, gender, BMI, Strain Index, and psychosocial factors. Diabetes Mellitus was not statistically related to lateral epicondylitis, but was significantly related to medial epicondylitis (OR=3.22, 95% CI=1.12, 9.25) after adjustment for the same factors. Additional post-hoc analyses were run, adjusting for company tenure, in addition to other covariates discussed above. Company tenure had no meaningful impact on the OR estimates between psychosocial factors and either LE or ME. We also analyzed data controlling for the presence of LE or ME. Those with a diagnosis of one epicondylitide were significantly more likely to have a diagnosis of the other epicondylitide (ORs range from 16.22-19.26), however this did not meaningfully change the relationships or ORs between the psychosocial measures and LE or ME.

Discussion

These data demonstrate numerous, significant associations between personal and occupational psychosocial factors and both lateral and medial epicondylitis in a large occupational population. Interestingly, these relationships persisted after adjustment for

other factors, particularly job physical measures. Relationships between psychosocial measures and the two epicondylitides appear largely similar. Trend analyses show statistically significant relationships between lateral epicondylitis and nine of the ten psychosocial factors. The sole exception is supervisor support, which showed no trend. Trend analyses with medial epicondylitis were statistically significant for eight of the ten psychosocial factors. There are more statistical significant relationships between these psychosocial factors and lateral epicondylitis than for medial epicondylitis, yet that is likely largely due to the lower statistical power for medial epicondylitis as there were 2.6-times as many cases of lateral epicondylitis.

The high association with mental job demands is similar in statistical strength to another study evaluating musculoskeletal injuries in a one year prospective cohort.(4) A prior study of poultry workers found that there was no relationship between supervisor or company safety commitment and epicondylitis, even after adjustment for occupational factors.(7) The relatively low correlations between most of these psychosocial factors suggests that these findings are not a repeated demonstration of a relationship between epiconylitides with an underlying construct of overall psychosocial health, but rather independent relationships with multiple psychosocial factors. The moderate correlations between questions 6. job satisfaction, 8. recommending your job to others and 9. taking the job again, may limit the interpretation of each of those relationships being independently related to epicondylitides.

One study found a meaningful relationship between job satisfaction and medial epicondylitis with an OR of 1.68 (95% CI 1.03, 2.73).(6) This same study found that depressive symptoms were statistically related to lateral epicondylitis, but not to medial epicondylitis. Another study by the same authors found no relationship between social support at work and either lateral or medial epicondylitis.(5) A study by Fan et al. found significantly lower risk of lateral epicondylitis with high job satisfaction (OR=0.36, 95% CI=0.19, 0.71) or high social support (OR=0.26, 95% CI=0.12, 0.57).(12) That same study found no statistical relationship between job security and general health. One study found that there was a relationship between social support and lateral epicondylitis among men, but not women.(4)

Many studies have found relationships between epicondylitis and some psychosocial factors such as depression, social support, and job satisfaction, which are approaching statistical significance, but are limited by their relatively small sample sizes.(4, 6, 9, 25)

This study has many strengths compared with prior analyses of the relationships between psychosocial factors and epicondylitis. These include the large sample size, multi-state capture, diverse populations, and systematic capture of symptoms and physical examinations. These data have multiple response levels for each of the 10 psychosocial factors, which provides the ability to assess potential dose response relationships as seen in relationship between mental exhaustion and both medial and lateral epicondylitis. Additionally, few studies are able to control for both personal demographic variables and measured job physical exposures as this study has done, allowing for more robust estimates of these relationships.

Weaknesses of this study include the cross sectional nature of these analyses, and the limitations of retrospective analyses. These data cannot demonstrate any causal relationships. It is possible that psychosocial factors may contribute to the development of LE or ME, while conversely it is possible that having LE or ME will make you more likely to develop poorer psychosocial measures. Additional weaknesses include potential for recall bias and the healthy worker effect. We do believe that both of these are minimized by the large, diverse sample size and quality of the data that were collected. There are minor differences in the data capture for epicondylitis as one half of this study's population were asked a question that included elbow paresthesias in aggregation with elbow pain. However, in our experiences talking with workers and in pain symptom diagrams, paresthesias in the elbow were rare and thus thought to be unlikely to have affected these results. Relationships between epicondylitis and medical conditions, such as Diabetes Mellitus, are inconsistent across studies. This is likely due to low statistical power to measure statistical relationships. A relationship between lateral epicondylitis and Diabetes Mellitus is likely underpowered in this study and may exist.

Conclusion

There are statistically significant relationships between numerous personal and occupational psychosocial factors and both medial and lateral epicondylitis that persisted after adjustment for personal demographics and job physical exposures. Additional evaluation of incidence data is needed to quantify the potential risk.

Acknowledgements and Funding

This study was funded, in part, by grants from the National Institute for Occupational Safety and Health (NIOSH/CDC) R01-OH009712, NIOSH Education and Research Center training grant T42/CCT810426-10.

We acknowledge the hundreds of workers who volunteered to participate in these studies. We also acknowledge the many years of work by dozens of technicians, assistants, and other research personnel from the research study groups that made the collection of the data for this manuscript possible.

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Table 1

Descriptive Baseline Data for Participants with Lateral Epicondylitis (n=121), Medial Epicondylitis (n=34) and the Total Population (n=1824).

Variable	Lateral Epicondylitis (n=121)	Medial Epicondylitis (n=34)	Total (n=1824)
	Mean ± SD or n (%)	Mean ± SD or n (%)	
Age (years)	44.5 ± 8.6	45.9 ± 7.1	41.1 ± 11.4
Body Mass Index (kg/m2)	28.6 ± 6.7	29.6 ± 5.2	28.6 ± 6.5
Strain Index for Typical Job, Right Hand	5.0 ± 5.9	7.3 ± 9.6	6.8 ± 9.9
TLV for HAL for typical Job, Right Hand	0.55 ± 0.54	0.60 ± 0.65	0.55 ± 0.62
Gender			
Female	86 (71.1)	22 (64.7)	1088 (59.6)
Male	35 (28.9)	12 (35.3)	736 (40.4)
Diabetes Mellitus			
No	112 (92.6)	29 (85.3)	1738 (95.3)
Yes	9 (7.4)	5 (14.7)	86 (4.7)
Tobacco Use			
Current	42 (34.7)	14 (41.2)	520 (28.5)
Never	45 (37.2)	11 (32.4)	881 (48.3)
Past	34 (28.1)	9 (26.5)	418 (22.9)
Thyroid disorder diagnosis			
No	111 (91.7)	32 (94.1)	1711 (93.8)
Yes	10 (8.3)	2 (5.9)	113 (6.2)
Medial Epicondylitis (Right elbow)			
No	103 (85.1)	34 (100)	1790 (98.1)
Yes	18 (14.9)	NA (NA)	34 (1.9)
Lateral Epicondylitis (Right elbow)			
No	NA (NA)	16 (47.1)	1703 (93.4)
Yes	121 (100)	18 (52.9)	121 (6.6)
1. How is your general health compared to people your own age?			
Much better/Excellent	10 (8.3)	4 (11.8)	261 (14.3)
Somewhat better/Good	39 (32.2)	10 (29.4)	626 (34.3)
The same/Fair	52 (43.0)	16 (47.1)	742 (40.7)
Worse/Poor	20 (16.5)	4 (11.8)	195 (10.7)
2. How often do you feel down, blue or depressed?			
Never	22 (18.2)	11 (32.4)	500 (27.4)
Seldom	75 (62.0)	14 (41.2)	1025 (56.2)
Often	21 (17.4)	7 (20.6)	267 (14.6)
Always	3 (2.5)	2 (5.9)	32 (1.8)
3. Physically Exhausted After Work			
Never	3 (2.5)	2 (5.9)	210 (11.5)

Variable	Lateral Epicondylitis (n=121)	Medial Epicondylitis (n=34)	Total (n=1824)
	Mean ± SD or n (%)	Mean ± SD or n (%)	
Seldom	47 (38.8)	13 (38.2)	869 (47.6)
Often	53 (43.8)	13 (38.2)	558 (30.6)
Always	18 (14.9)	6 (17.6)	187 (10.2)
4. Mentally Exhausted After Work			
Never	9 (7.4)	4 (11.8)	467 (25.6)
Seldom	60 (49.6)	15 (44.1)	879 (48.2)
Often	45 (37.2)	11 (32.4)	397 (21.8)
Always	7 (5.8)	4 (11.8)	81 (4.4)
5. Get along with your coworkers			
Hardly Ever/Never	56 (46.3)	16 (47.1)	944 (51.8)
Some of the time/Occasionally	54 (44.6)	11 (32.4)	740 (40.6)
Always/Often	11 (9.1)	7 (20.6)	140 (7.7)
6. How satisfied are you with your job			
Satisfied	22 (18.2)	6 (17.6)	519 (28.4)
Neither Satisfied nor Dissatisfied	69 (57.0)	22 (64.7)	937 (51.4)
Dissatisfied	30 (24.8)	6 (17.6)	368 (20.2)
7. Supervisor Support			
Always	79 (65.3)	26 (76.5)	1200 (65.3)
Occasionally	34 (28.1)	7 (20.6)	525 (28.8)
Hardly Ever/Never	8 (6.6)	1 (2.9)	99 (5.4)
8. How likely would you recommend your job to someone else			
Strongly recommend	13 (10.7)	3 (8.8)	278 (15.2)
Recommend	51 (42.2)	14 (41.2)	891 (48.8)
Neither Recommend nor discourage	33 (27.3)	9 (26.5)	430 (23.6)
Not Recommend	24 (19.8)	8 (23.5)	225 (12.3)
9. How likely would you take this job again			
Very Likely	18 (14.9)	7 (20.6)	521 (28.6)
Likely	50 (41.3)	12 (35.3)	716 (39.2)
Neither Likely nor Unlikely	32 (26.4)	8 (23.5)	424 (23.2)
Unlikely	21 (17.4)	7 (20.6)	163 (8.9)
10. My employer cares about my health and safety on the job			
Strongly Agree	14 (11.6)	6 (17.6)	447 (24.5)
Agree	77 (63.6)	19 (55.9)	1135 (62.2)
Disagree	24 (19.8)	7 (20.6)	175 (9.6)
Strongly Disagree	6 (5.0)	2 (5.9)	67 (3.7)

Table 2

Spearman Correlation Coefficients for the 10 psychosocial variables.

	1. General Health	2. Depression	3. Physically Exhausted	4. Mentally Exhausted	5. Get Along	6. Job Satisfaction	7. Supervisor Support	8. Recommend Job	9. Take Job	10. Employer Cares
1. General Health	1.000									
2. Depression	0.162	1.000								
3. Physically Exhausted	0.187	0.222	1.000							
4. Mentally Exhausted	0.146	0.316	0.409	1.000						
5. Get Along	0.084	0.068	0.028	0.112	1.000					
6. Job Satisfaction	0.153	0.161	0.172	0.139	0.187	1.000				
7. Supervisor Support	0.091	0.077	0.086	0.073	0.141	0.308	1.000			
8. Recommend Job	0.144	0.096	0.216	0.154	0.241	0.554	0.305	1.000		
9. Take Job	0.134	0.096	0.166	0.102	0.172	0.594	0.296	0.603	1.000	
10. Employer Cares	0.117	0.081	0.174	0.102	0.202	0.387	0.283	0.395	0.364	1.000

J Occup Environ Med. Author manuscript; available in PMC 2017 June 01.

Table 3

Adjusted * Odds Ratios, 95% Confidence Intervals, and tests for trends for relationships between Personal and Job-Related Psychosocial Factors and Lateral Epicondylitis and Medial Epicondylitis.

	Lateral Epicondylitis	Medial Epicondylitis
1. How is your general health compared to people your own age?	Trend <0.05	Trend >0.05
Much better/Excellent	1.00 (Reference)	1.00 (Reference)
Somewhat better/Good	1.74 (0.85, 3.54)	1.06 (0.33, 3.43)
The same/Fair	2.00 * (1.00, 4.03)	1.52 (0.50, 4.65)
Worse/Poor	2.97 * (1.33, 6.62)	1.40 (0.34, 5.81)
2. How often do you feel down, blue or depressed?	Trend <0.05	Trend <0.05
Never	1.00 (Reference)	1.00 (Reference)
Seldom	1.74 * (1.07, 2.84)	0.62 (0.28, 1.38)
Often	1.82 (0.97, 3.41)	1.23 (0.47, 3.27)
Always	1.93 (0.51, 6.93)	2.67 (0.55, 12.95)
3. Physically Exhausted After Work	Trend <0.05	Trend <0.05
Never	1.00 (Reference)	1.00 (Reference)
Seldom	3.90 * (1.20, 12.67)	1.63 (0.36, 7.33)
Often	6.73 * (2.07, 21.88)	2.50 (0.55, 11.29)
Always	7.04 * (2.02, 24.51)	3.47 (0.68, 17.78)
4. Mentally Exhausted After Work	Trend <0.05	Trend <0.05
Never	1.00 (Reference)	1.00 (Reference)
Seldom	3.50 * (1.72, 7.14)	2.01 (0.66, 6.11)
Often	6.24 * (3.00, 12.98)	3.52 * (1.10, 11.25)
Always	4.74 * (1.70, 13.22)	6.51 * (1.57, 27.04)
5. Get along with your coworkers	Trend <0.05	Trend <0.05
Always/Often	1.00 (Reference)	1.00 (Reference)
Some of the time/Occasionally	1.32 (0.89, 1.95)	0.91 (0.42, 1.98)
Hardly Ever/Never	1.50 (0.76, 2.98)	3.19 * (1.27, 8.03)
6. How satisfied are you with your job	Trend <0.05	Trend <0.05
Satisfied	1.00 (Reference)	1.00 (Reference)
Neither Satisfied nor Dissatisfied	1.88 * (1.15, 3.08)	2.10 (0.85, 5.23)
Dissatisfied	2.33 * (1.31, 4.14)	1.53 (0.49, 4.82)
7. Supervisor Support	Trend >0.05	Trend >0.05
Always	1.00 (Reference)	1.00 (Reference)
Occasionally	0.94 (0.62, 1.43)	0.58 (0.25, 1.34)
Hardly Ever/Never	1.21 (0.56, 2.59)	0.42 (0.06, 3.15)

	Lateral Epicondylitis	Medial Epicondylitis
8. How likely would you recommend your job to someone else	Trend <0.05	Trend <0.05
Strongly recommend	1.00 (Reference)	1.00 (Reference)
Recommend	1.34 (0.72, 2.52)	1.62 (0.46, 5.70)
Neither Recommend nor discourage	1.97 * (1.01, 3.84)	2.19 (0.58, 8.20)
Not Recommend	2.70 * (1.33, 5.46)	3.60 (0.94, 13.81)
9. How likely would you take this job again	Trend <0.05	Trend <0.05
Very Likely	1.00 (Reference)	1.00 (Reference)
Likely	2.19 * (1.26, 3.80)	1.26 (0.49, 3.22)
Neither Likely nor Unlikely	2.42 * (1.33, 4.39)	1.41 (0.51, 3.94)
Unlikely	4.20 * (2.17, 8.15)	3.20 * (1.10, 9.32)
10. My employer cares about my health and safety on the job	Trend <0.05	Trend <0.05
Strongly Agree	1.00 (Reference)	1.00 (Reference)
Agree	2.24 * (1.25, 4.01)	1.24 (0.49, 3.13)
Disagree	4.73 * (2.38, 9.42)	2.97 (0.98, 8.99)
Strongly Disagree	2.98 * (1.10, 8.09)	2.16 (0.42, 11.02)

* Adjusted for Age, Gender, Body Mass Index and Strain Index